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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

LEE, RIP A

ART UNIT	PAPER NUMBER
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1713

DATE MAILED: 12/05/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/715,775

Applicant(s)

KAO ET AL.

Examiner

Rip A. Lee

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on September 16, 2002.
- 2a) ☒ This action is FINAL. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 23-53 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 23-53 is/are rejected.
- 7) ☒ Claim(s) 24-26, 35, 40 and 49 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 6.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

### **DETAILED ACTION**

This office action follows a response filed on September 16, 2002. Original claims 1-22 have been cancelled, and new claims 23-53 have been added.

#### ***Claim Objections***

1. Claims 24-26 are objected to because of the following informalities: It is not clear which components are to be contacted. The claim may refer to components in step (i), the components of step (ii), or all components from both steps. Appropriate correction is required.
2. Claim 35 and 49 are objected to because of the following informalities: Change "an neutral Lewis base" to "a neutral Lewis base."
3. Claim 40 is objected to because of the following informalities: Line 4 of the claim states that the catalyst composition is contacted for at least 1 min, however, there is no indication as to what the catalyst composition is contacted with. Appropriate correction is required.
4. Claim 40 is objected to because of the following informalities: Change step "(c)" to step "(b)."

***Claim Rejections - 35 USC § 112***

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claims 34 and 48 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The claims are drawn generally to a catalyst based on bidentate ligands containing pyridine or quinoline moieties. It is not clear what type of compound is being claimed since this recitation describes hundreds of possibilities. Without further qualification, the claims remain vague and indefinite.

***Claim Rejections - 35 USC § 102***

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

8. Claims 23-28, 30, 33, 36-42, 44, 47, 50, 51, and 53 are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent No. 5,674,795 to Wasserman *et al.*

Wasserman *et al.* teaches a process for polymerization of olefins in the presence of a catalyst composition comprising a metallocene compound, a cocatalyst, a particulate filler and diluent (claim 1). Specifically, the first step involves combining metallocene DPZ with MAO supported on silica (col. 12, lines 2-5). In the second step, the resulting mixture is combined

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with aluminum alkyl co-catalyst in hexane (col. 12, lines 37-39). Finally, the last step requires contact of the resulting catalyst with olefin to effect polymerization. In sum, the reference teaches the exact process described in present claim 1.

According to the text, a stirring time of 2 hr was used for supporting MAO on silica, and a stirring time of 16 hr was used for combining metallocene and MAO/SiO<sub>2</sub> (col. 12, lines 4 and 7). The catalyst is slurried in Kaydol<sup>®</sup> which is a mineral oil having a flash point greater than 200 °F (see Table II). In the example provided, 31 mmol of zirconium (col. 12, line 4) was used along with 1 g (0.87 mmole) of TIBA (see Table 2), resulting in a TIBA/Zr ratio of 0.028. The catalyst can be adapted for slurry and gas phase polymerizations (col. 12, line 56).

### *Claim Rejections - 35 USC § 103*

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

11. Claims 35 and 49 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5,674,795 to Wasserman *et al.*

The discussion of the disclosures of the prior art of Wasserman *et al.* from paragraph 8 of this office action is incorporated here by reference. The inventors contemplate the use of ionic salts of general formula  $[A^+][BR^*_4]$  where  $A^+$  is a cationic Lewis acid capable of abstracting a ligand from the metallocene and  $R^*$  is a substituted aromatic hydrocarbon (col. 7, lines 6-9). The designation of the activator is not written in the same fashion as that in the present claims, however, one with ordinary skill in the art appreciates that they represent the same set of compounds routinely used for such purposes.

Although Wasserman *et al.* does not show use these ionizing activators in lieu of TIBA in the examples, one having ordinary skill in the art would have found it obvious to do so because these compounds are fully disclosed in the text. In view of the fact that TIBA was shown to work, and in view of the fact that the inventors indicate that one or more co-catalysts may be used, the skilled artisan would have expected such a substitution to work with a reasonable expectation of success. *In re O'Farrell*, 7 USPQ 2d 1673 (Fed. Cir. 1988).

12. Claims 29, 43, and 52 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wasserman *et al.* in view of U.S. Patent No. 6,239,058 to Shamshoum *et al.*

Wasserman *et al.* does not teach suspension of the ionizing activator in a diluent having flash point greater than 200 °F (*i.e.*, mineral oil). The inventors use commercially available ionizing activators which are sold as suspensions in conventional hydrocarbon solvents such as hexane, isopentane, *etc.* (see list of materials, col. 10, lines 31-43). Since examples using ionic

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salts as the ionizing activator are not shown in the reference, naturally, there is no showing of the solvent of choice for these compounds. However, in view of the fact that Kaydol<sup>®</sup> is used as the medium for the overall catalyst, one having skill in the art would have found it obvious to use this mineral oil to suspend other ionizing activators as well. Arriving at such a simple notion would be obvious to the literate person skilled in the art because this solvent is fully disclosed in the reference.

In fact, Shamshoum *et al.* clearly shows an example in which the metallocene/MAO/SiO<sub>2</sub> system is mixed with ionizing activator in mineral oil diluent (see Example 1). Thus, one having skill in the art, having both teachings at hand, would find it obvious to use mineral oil for mixing all catalyst components together, as taught in Shamshoum *et al.* Such a combination is obvious because both references teach essentially the same type of polymerization process.

13. Claims 31, 32, 45, and 46 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wasserman *et al.* in view of U.S. Patent No. 6,066,703 to Reichle *et al.*

Wasserman *et al.* does not teach combining the catalyst with a cycloalkadiene compound. Reichle *et al.*, however, show that addition of cycloalkadienes such as cyclopentadiene, indene, fluorene and its derivatives (see Tables I-V, examples 1-48) to a catalyst composition is beneficial for enhancing catalyst activity. Therefore, one having skill in the art would have found it obvious to add cycloalkadienes of Reichle *et al.* to the catalyst Wasserman *et al.* in order to arrive at the present claims. Since this process is shown to work in the prior art, one would expect the modified catalyst of Wasserman *et al.* to exhibit enhanced activity as well, thereby providing the requisite motivation for combining references. *In re O'Farrell*, 7 USPQ 2d 1673 (Fed. Cir. 1988).

***Conclusion***

14. The following rejections from the previous office action have been overcome by amendment:

- (i) Rejection of claim 10 under 35 U.S.C. 112, second paragraph.
- (ii) Rejection of claims 10-14 under 35 U.S.C. 102(b) as being anticipated by U.S. Patent No. 5,674,795 to Wasserman *et al.*
- (iii) Rejection of claims 10-14 under 35 U.S.C. 102(b) as being anticipated by U.S. Patent No. 6,239,058 to Shamshoum *et al.*
- (iv) Rejection of Claims 10-14 under 35 U.S.C. 103(a) as being unpatentable over EP 578 838 to Herrmann *et al.*

15. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.



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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Rip A. Lee whose telephone number is (703)306-0094. The examiner can be reached on Monday through Friday from 9:00 AM - 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Wu, can be reached at (703)308-2450. The fax phone number for the organization where this application or proceeding is assigned is (703)746-7064. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)308-0661.

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November 30, 2002



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